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ABSTRACT

The measurement of academic climate in terms of educational processes and their effect on student outcome measure can make an important contribution to the achievement of educational goals by providing feedback to teachers on their teaching methods, yielding new information concerning student perceptions, identifiying staff training needs, and by serving as a program evaluation tool. The Student Activities Questionnaire (SAQ) was constructed to obtain such information by utilizing the consumers of the educational system--the students themselves. This paper reviews the development and rationale of the instrument and the results obtained to date. Academic climate and the effects on students was measured via a behaviorally focused, multiple-choice questionnaire, administered to 654 experimental and control students in the 5th and 6th grades. Eight measures were developed through item analysis techniques to provide academic climate scores, information on specific classroom activities, and student outcome measures. The experimental group significantly exceeded the control group on 7 comparisons. Individual class averages varied from the 20th to beyond the 80th percentile on the various scores, indicating the instrument measured differences in academic climate and could provide valuable feedback for the educational system. (Author/DEP)

ABSTRACT[1]

The Measurement of Academic Climate in Elementary Schools

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Academic climate was measured in terms of educational processes and effects on students via a behaviorally focused, multiple-choice questionnaire administered to 654 experimental and control students in the 5th and 6th grades. Eight measures were developed through item analysis techniques to provide academic climate scores, information on specific classroom activities, and student outcome measures. The experimental group significantly exceeded the control group on 7 comparisons. Individual class averages varied from the 20th to beyond the 80th percentile on the various scores, indicating the instrument measured differences in academic climate and could provide valuable feedback for the educational system.

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The measurement of academic climate in terms of educational processes and their effect on student outcome measures can make an important contribution to the achievement of educational goals by providing feedback to teachers on their teaching methods, yielding new information concerning student perceptions, identifying staff training needs, and by serving as a program evaluation tool. The Student Activities Questionnaire (SAQ) was constructed to obtain such information by utilizing the consumers of the educational system--the students themselves. This paper will review the development and rationale of the instrument and the results obtained to date.

The impetus for the construction of the SAQ was an evaluation of Title III Project IMPLODE which was concerned with developing and evaluating multiple talent teaching procedures so that students could develop potential across five talent areas (Creativity, Communication, Decision Making, Planning, and Forecasting) in addition to academic subject matter (Taylor, 1971; Guilford, 1967). It was believed that the teaching processes would result in significant differences in academic climate as well as higher levels of student performance in the talent areas.

Procedure

As a result of interviews with students and teachers and observations of classes, an item pool was generated and a number of scores were tentatively developed and refined. Whenever possible, items were written with a behavioral focus, that is, the student was asked to respond to items in terms of whether or not specific events occurred, how often they occurred, what he did in reaction to these events, etc., to provide specific information about teaching behaviors and their implications. The intent in the construction of the SAQ was to emphasize the impact of the educational process rather than the input to the educational system, i.e., the traits or abilities of the students.

When a large pool of preliminary items had been generated and reviewed, pilot questionnaires were prepared and administered to approximately 600 students in the experimental and control schools. The items were then keyed on an a priori, judgmental basis directed toward the theoretical concept behind each score. Following this procedure, data were item analyzed, i.e., each item alternative was correlated with each score utilizing biserial correlations to evaluate the original classification and item writing system. In essence, this procedure provided item-score correlations for each item alternative across all scores. A number of items were then dropped and others were rewritten in order to obtain more homogeneous measures and greater differentiation across the individuals studied. A revised form of the SAQ containing 60 multiple-choice items was then developed and administered to 654 students in the 5th and 6th grades. The score descriptions and results in the next section were obtained from item analysis of this revised version of the SAQ.

Score Descriptions

1. ENJOYMENT OF SCHOOL - This score measures the students' enjoyment of class activities and school work. Students with high scores indicate that they like what they do in school and that they are frequently excited about the day's happenings. They report that they often like to stay in at recess, lunch, or after school to finish some classwork or project. They also report being excited about going to school in the morning and often tell their parents about good experiences in school.

2. INDEPENDENT DEVELOPMENT - This score measures the degree of self-directed development which the students exhibit by engaging in developmental activities outside of the classroom. Students with high scores in this area indicate that they often work on something at home just for the learning experience and they often practice doing something in order to improve the skill. They often read books, newspapers, or magazines at home, and frequently take home many library books. They also report that they have started new activities at home as a result of school experiences, and have brought up home activities in class discussions.

3. REINFORCEMENT OF SELF-CONCEPT - This score measures the amount of positive feedback received by the student, either through personal contact or structured class activities. It is also a measure of the student's perception of this feedback and his feelings about it. Students with high scores in this area indicate that their teacher frequently talks to them individually about their work, offers encouragement for difficult tasks, and gives frequent positive feedback for good performances. These students also report that they feel encouraged when they receive feedback and consequently develop pride in their schoolwork. In addition to good teacher contact, they also report that they have frequent class activities where students have the opportunity to give each other feedback regarding good work.

4. CLASSROOM PARTICIPATION - This score measures student participation in classroom activities. The individual items in the score involve frequency of classroom discussions, number of students that typically participate, and opportunities for participation in the classroom. High scores in this area indicate frequent class discussions and activities where many students are called on or given the opportunity to speak. They also indicate that students have the opportunity to work with a variety of other students on group projects and are often given the opportunity to teach each other.

5. DEMOCRATIC CLASSROOM CONTROL - This score is a measure of student input into classroom decision making, planning of individual activities and enforcement of rules. Students with high scores in this area feel that they are allowed frequent input through discussions and planning activities, such that decisions are made through the joint effort of teacher and students. They also indicate that their teacher will permit a noisy classroom during many activities and stresses student participation rather than authoritarian control.

6. CAREER DEVELOPMENT - This score measures the extent that classroom activities facilitate the development of general skills basic to a broad range of vocations and to general personal maturity. The items in the score measure leadership skills, planning, interacting with co-workers, organization and presentation of ideas, and evaluation and decision making.

Classroom activities relating to these areas gave the student training in many of the skills necessary for a successful vocational career and the development of general maturity. For example, giving individual reports to the class may later relate to presenting ideas to an employer or a business meeting of associates. Evaluating a class project may later relate to the appraisal of one's own efforts or a product to be produced.

Defined in this way, this score gives a general indication of the extent of relevant and useful activities that involve principles applicable beyond the classroom and are personally useful towards the development of individual maturity and vocational skills.

7. INDIVIDUALIZATION OF INSTRUCTION - This score measures the extent that students perceive their teachers as sensitive to their own individual needs, progress, and goals. High scores in this area reflect students who talk privately with their teachers about themselves and their school work and feel that their teachers are sensitive to their strengths and weaknesses and the kinds of activities they enjoy. They further indicate that the difficulty level of their classwork is neither too hard nor too easy and that activities are most often individualized to meet the needs and abilities of each student.

8. MULTIPLE TALENT EXPERIENCE - This score measures the extent that activities connected with Multiple Talent Teaching occur in the classroom. The items in this score measure a variety of activities in the five talent areas of planning, decision making, forecasting, creativity and communication. High scores reflect extensive experience with the talent development techniques used in Multiple Talent Teaching.

The first three scores in the SAQ were constructed as outcome measures, while the others were directly concerned with process. However, because items were worded within the context of the school situation whenever possible, the Enjoyment of School and Reinforcement of Self-Concept scores also contain items concerned with educational processes.

When mean scores were compared for the control and experimental schools, the experimental school exceeded the control schools on each

of the 8 comparisons. All but the Individualization of Instruction score were significantly different at or beyond the .05 level of confidence. Since the control schools also had special programs in the area of individualization of instruction this exception was not surprising. These data indicated that the experimental teaching program resulted in significant differences in academic climate.[2]

As shown in Table 1, all of the SAQ measures were relatively independent with varied intercorrelations ranging from .18 to .49 except for the Multiple Talent Teaching and Career Development scores, which contained some common items. Although not shown in the Table, the control variables of grade and sex had only trivial correlations with SAQ scores, except for the relationship between sex and the Enjoyment of School score (r=.26) which indicated that girls enjoyed school more than boys in the sample studied.

The item analysis and intercorrelation results provided information concerning various teaching strategies and their relationships to the academic climate measures and the outcome scores. The Enjoyment of School score generally had moderate but consistent correlations with all of the other SAQ scores indicating that those activities and teacher behaviors contributing to high scores in other areas would also increase students' enjoyment of school. In particular, students with high scores on Enjoyment of School perceived

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[2] The students were also evaluated with specially constructed instruments to assess performance in each of the 5 talent areas. Briefly, the experimental school exceeded the control school on each of the 18 comparisons made, with 8 of the 18 significant at or beyond the .05 level of confidence.

TABLE 1

INTERCORRELATIONS AMONG SAQ SUBSCORES*

SCORES	1	2	3	4	5	6	7	8
1. ENJOYMENT OF SCHOOL	--							
2. INDEPENDENT DEVELOPMENT	.36	--						
3. REINFORCEMENT OF SELF-CONCEPT	.42	.36	--					
4. CLASSROOM PARTICIPATION	.25	.34	.24	--				
5. DEMOCRATIC CLASSROOM CONTROL	.19	.22	.18	.38	--			
6. CAREER DEVELOPMENT	.41	.46	.49	.42	.42	--		
7. INDIVIDUALIZATION OF INSTRUCTION	.25	.27	.36	.16	.14	.27	--	
8. MULTIPLE TALENT EXPERIENCE	.38	.37	.44	.34	.41	.88	.32	--

*n = 654

their teachers as more willing to encourage and reinforce expression of their ideas through activities such as thinking up new ideas, practicing decision making, and guessing the future.

The Independent Development score was related to a number of teacher related activities, e.g., a high score in this area indicated a great deal of discussion in the classroom and frequent discussions with teachers involving the student's work. These results suggested that a loosely structured democratic classroom, in combination with personalized guidance on the part of the teacher, could influence the Independent Development score in a positive direction.

The Reinforcement of Self-Concept score had low to moderate relationships with each of the other scores. Among these moderate relationships, the highest were with Individualization of Instruction, Classroom Participation, and Enjoyment of School. This is understandable, since individualization efforts and greater opportunities for classroom participation should contribute to the reinforcement of the student's self-concept and enjoyment of school. The classroom activities which were associated with high self-concept scores included: practice in decision making, making up advertising ideas, setting personal goals, having frequent class discussions, and making plans for the school day. It would seem that, while the teacher has an important primary responsibility to help develop the student's self-concept, those activities which allow the student himself to build his esteem may be as important as the reinforcement supplied. These data also indicated that it is important to provide a variety of opportunities for success rather than limiting classroom activities to a comparatively small

number of intellectual processes.

The first part of the output from the SAQ scoring system presents the percentile standing of each student on each of the 8 scores. This information can be important in helping the teacher relate to individual students. For example, a low score on Enjoyment of School and a high score on Independent Development indicates that the student has highly developed interests, hobbies, and other activities independent of school activities. If feasible, these activities can be explored and integrated with class projects to increase the student's enjoyment of school. Another interesting pattern is students with low reinforcement of self-concept and Individualization of instruction scores. This suggests that the student has a great desire for attention and needs frequent support in his activities. Similar interpretations can be used from various other combinations of scores.

This computer output of scores can also include suggestions for teachers on methods for increasing students' scores across the 8 measures. A variety of strategies are possible for supplying this information. For example, suggestions could be presented for only the 3 lowest scores of a particular class. Samples of this prescriptive output are presented in Table 2. This information is only given for consideration by teachers and should be used in conjunction with other information based upon his experience and knowledge of the classroom situation.

From a diagnostic, staff development viewpoint, the SAQ was very sensitive to differences in academic climate as illustrated by a comparison

TABLE 2

EXAMPLES OF PRESCRIPTIVE OUTPUT

ENJOYMENT OF SCHOOL. THE STUDENTS' SCORES MAY BE IMPROVED BY ACTIVITIES WHICH PROMOTE THE STUDENTS' PERCEPTION OF SCHOOL AS ENJOYABLE. SOME SPECIFIC ACTIVITIES WHICH MIGHT BE CONSIDERED ARE: PROGRAMMING MORE CLASS DISCUSSIONS INTO THE DAY'S ACTIVITIES; ALLOWING MORE FREQUENT OPPORTUNITIES FOR MORE STUDENTS TO SPEAK OUT IN CLASS DISCUSSIONS; GIVING MORE FREQUENT POSITIVE FEEDBACK OF GOOD WORK; INCREASING DISCUSSIONS WITH INDIVIDUAL STUDENTS ABOUT THEIR LIKES AND DISLIKES AND WHAT IS HARD AND EASY WORK FOR THEM.

INDEPENDENT DEVELOPMENT. THE STUDENTS' SCORES MAY BE IMPROVED BY ENCOURAGING STUDENTS TO DEVELOP THEIR OWN SKILLS AND POTENTIAL. SOME SPECIFIC ACTIVITIES WHICH MIGHT BE CONSIDERED ARE: HAVING DISCUSSIONS ABOUT OUT OF CLASS ACTIVITIES; CREATING OPPORTUNITIES FOR STARTING OUTSIDE PROJECTS RELATED TO CLASSWORK; REWARDING INDEPENDENT USE OF LIBRARY BOOKS; ENCOURAGING IDEAS AND SUGGESTIONS THAT THE STUDENT HAS DEVELOPED OUTSIDE OF CLASS; WHERE POSSIBLE, ENCOURAGING PARENTS TO TAKE NOTICE OF STUDENT'S HOBBIES AND EFFORTS AT SELF DEVELOPMENT.

REINFORCEMENT OF SELF-CONCEPT. THE STUDENTS' SCORES MAY BE IMPROVED BY INCREASING POSITIVE FEEDBACK TO STUDENTS FOR GOOD WORK AND BY INCREASING INDIVIDUAL CONTACT. SOME SPECIFIC ACTIVITIES WHICH MIGHT BE CONSIDERED ARE: INCREASING INDIVIDUAL CONTACT WITH EACH STUDENT; INCREASING POSITIVE FEEDBACK FOR GOOD WORK; EMPHASIZING IMPROVEMENT AND SUCCESS RATHER THAN FAILURES IN AN INDIVIDUAL STUDENT'S PERFORMANCE; GIVING ENCOURAGEMENT WHEN A STUDENT ENCOUNTERS DIFFICULTY; PROGRAMMING OPPORTUNITIES FOR STUDENTS TO GIVE EACH OTHER GOOD FEEDBACK ON THEIR WORK.

CLASSROOM PARTICIPATION. THE STUDENTS' SCORES MAY BE IMPROVED BY OFFERING MORE OPPORTUNITIES FOR STUDENT INTERACTION AND INVOLVEMENT. SOME SPECIFIC ACTIVITIES WHICH MIGHT BE CONSIDERED ARE: PROGRAMMING FREQUENT CLASS DISCUSSIONS; GIVING STUDENTS GREATER OPPORTUNITY TO TEACH EACH OTHER; PROVIDING OPPORTUNITIES FOR STUDENTS TO WORK IN GROUPS ON PROJECTS OR CLASSWORK; MAKING A SPECIFIC EFFORT TO CALL ON ALL STUDENTS; SPENDING TIME IN CLASS DISCUSSING AND PLANNING STUDENT ACTIVITIES; SEEING THAT EACH STUDENT HAS OPPORTUNITIES TO BE A GROUP LEADER.

DEMOCRATIC CLASSROOM CONTROL. THE STUDENTS' SCORES MAY BE IMPROVED BY INCREASING THE DEGREE OF STUDENT INPUT INTO DECISIONS AND PLANS REGARDING CLASS ACTIVITIES. SOME SPECIFIC ACTIVITIES WHICH MIGHT BE CONSIDERED ARE: PLANNING WITH STUDENTS FOR FUTURE CLASS ACTIVITIES, DAILY, WEEKLY, AND IN CHOICE OF UNITS; HAVING DISCUSSIONS WITH STUDENTS ABOUT THEIR CODE OF BEHAVIOR; REINFORCING STUDENTS FOR CONTRIBUTING TO DISCUSSIONS; ALLOWING THE STUDENTS TO PLAN PART OF THEIR WORK BY THEMSELVES; CONSIDERING STUDENT-DEVELOPED LEARNING GAMES AND REVIEW QUESTIONS.

CAREER DEVELOPMENT. THE STUDENTS' SCORES MAY BE IMPROVED BY INCREASING ACTIVITIES THAT CONTRIBUTE TO DEVELOPMENT OF LIFELONG CAREER SKILLS AND ATTITUDES. SOME SPECIFIC ACTIVITIES WHICH MIGHT BE CONSIDERED ARE: DISCUSSING CURRENT EVENTS IN THE CLASSROOM; PROVIDING OPPORTUNITIES FOR STUDENTS TO USE EVALUATION AND DECISION-MAKING SKILLS; PROVIDING OPPORTUNITIES FOR STUDENTS TO GENERATE AND IMPLEMENT NEW IDEAS; HAVING CLASS DISCUSSIONS ABOUT WHAT MIGHT HAPPEN IN THE FUTURE AND WHY; ENCOURAGING STUDENTS TO COMPLETE ACTIVITIES THEY HAVE PLANNED; PROVIDING OPPORTUNITIES FOR EVERY STUDENT TO HOLD A POSITION OF RESPONSIBILITY.

INDIVIDUALIZATION OF INSTRUCTION. THE STUDENTS' SCORES MAY BE IMPROVED BY MAXIMIZING THE AMOUNT OF INDIVIDUAL INSTRUCTION AND PROGRAMMING FOR EACH STUDENT. SOME SPECIFIC ACTIVITIES WHICH MIGHT BE CONSIDERED ARE: PROVIDING OPPORTUNITIES FOR INDIVIDUAL STUDENTS TO WORK ON ACTIVITIES APPROPRIATE FOR HIS OWN LEVEL OF DEVELOPMENT; DETERMINING THE INTERESTS AND ABILITIES OF INDIVIDUAL STUDENTS AND PROGRAMMING THEIR WORK ON AN INDIVIDUAL BASIS; UTILIZING EVERY OPPORTUNITY TO TALK TO EACH STUDENT INDIVIDUALLY ABOUT HIS WORK; ALLOWING THE STUDENTS TO EVALUATE THEIR OWN WORK AND TELL HOW IT MIGHT BE IMPROVED; PROVIDE OPPORTUNITIES FOR STUDENTS TO GIVE EACH OTHER FEEDBACK.

MULTIPLE TALENT EXPERIENCE. THE STUDENTS' SCORES MAY BE IMPROVED BY UTILIZATION OF MULTIPLE TALENT TEACHING TECHNIQUES. SOME SPECIFIC ACTIVITIES WHICH MIGHT BE CONSIDERED ARE: OFFERING THE STUDENTS OPPORTUNITIES TO PLAN FOR THE FUTURE; PROVIDING STUDENTS THE OPPORTUNITY TO SET GOALS FOR THEMSELVES; ALLOWING STUDENTS TO MAKE DECISIONS REGARDING THEIR OWN ACTIVITIES; ALLOWING THE STUDENTS TO HAVE FREQUENT INPUT INTO THE PLANNING OF CLASS ACTIVITIES; PROGRAMMING OPPORTUNITIES FOR STUDENTS TO GENERATE NEW IDEAS; PROVIDING THE OPPORTUNITY FOR STUDENTS TO INTERACT WITH EACH OTHER.

of the mean scores for each of the classes studied. Table 3 presents a frequency distribution of the classes studied in terms of student percentile scores.

As the table illustrates, when the individual student scores were averaged for each of the classes studied, one class had a mean score at the 30th percentile on the Enjoyment of School score, two classes scored at about the 40th percentile, etc. The SAQ was thus very sensitive to differences in academic climate as the scores for the classes studied varied widely. The mean scores of the individual classes studied varied from approximately the 20th to over the 80th percentile on the various SAQ scores.

It is believed that information concerning academic climate as described by students could facilitate the attainment of a broad range of educational objectives, particularly those concerned with affective education, by providing feedback to teachers which can foster more effective relationships with students. Present results also indicated that the instrument has potential for other applications including use as a program evaluation tool.

TABLE 3

FREQUENCY DISTRIBUTION OF SAQ
CLASS PERCENTILE SCORES

NAME OF SCORE	PERCENTILE STANDINGS OF CLASSES STUDIED							
	20	30	40	50	60	70	80	90
ENJOYMENT OF SCHOOL		2	3 2 5 5	2 2 1	4 3		1	
INDEPENDENT DEVELOPMENT		1 1	2 4 5 5	4 6	1 1			
REINFORCEMENT OF SELF-CONCEPT			4 3 3 3 2 2	2 4	1 2	1 1 1	1	
CLASSROOM PARTICIPATION	1	5	1 1 2	6 3 2 1	4 2 1		1	
DEMOCRATIC CLASSROOM CONTROL	1 2		3 2 3 2	3 3	4 2 1		2 1	1
CAREER DEVELOPMENT	1	3 2	2 1	2 2 4	4 2 1	1 1	1 1 1	1
INDIVIDUALIZATION OF INSTRUCTION	1	1 2	1	2 1 5 7	4 1 2	1 1	1	
MULTIPLE TALENT EXPERIENCE	2 3	3	1 3 1	3 4 3		1 1	1 1	1

NUMBERS = # OF CLASSES

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